

Appln. No. 09/756,451

Response to Final Rejection dated September 30, 2003

Reply to Final Rejection of July 30, 2003

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A process for preparing a fiber-reinforced thermoplastic composite article comprising the steps of:
 - a) drawing a fiber bundle continuously through a melt obtained by heating a rigid thermoplastic resin;
 - b) impregnating the drawn fiber bundle with the melted rigid thermoplastic resin to form a composite melt;
 - c) drawing the composite melt through a consolidation die to form a thermoformable shaped article;
 - d) thermoforming the shaped article on-line by which the ~~part~~ article is curved, twisted or provided with a varied cross-sectional shape along its length; and
 - e) cooling the shaped article to solidify the thermoplastic resin and provide an article that is curved, twisted or provided with a varied cross-sectional shape along its length.
2. (original) The process of claim 1, wherein said thermoplastic resin includes a depolymerizable and repolymerizable thermoplastic resin having a T_g of not less than 50°C.
3. (original) The process of claim 2, wherein said thermoforming is performed by passing said shaped article through a rotary die, at a temperature sufficiently high that the thermoplastic resin is at least softened enough that the composite can be shaped under the pressure imposed by the rotary die, and then cooling the shaped article to a temperature below the solidification temperature of the thermoplastic resin.
4. (previously amended) The process of claim 2, wherein said thermoforming is performed by passing the shaped article through a pair of moving caterpillar rollers that are oriented perpendicular to the direction the composite melt is being drawn while maintaining the shaped article at an elevated temperature such that it remains thermoformable so that the shaped article is twisted by movement of said caterpillar rollers, and then cooling the shaped article to a temperature below the solidification temperature of the thermoplastic resin.

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5. (original) The process of claim 2, wherein said thermoforming is performed by passing said shaped article through a rotating die while maintaining the shaped article at an elevated temperature such that it remains thermoformable, and then cooling the shaped article to a temperature below the solidification temperature of the thermoplastic resin.
6. (original) The process of claim 2, wherein said thermoforming is performed by hauling off one side of said shaped article at a faster rate than another side while maintaining the shaped article at an elevated temperature such that it remains thermoformable, and then cooling the shaped article to a temperature below the solidification temperature of the thermoplastic resin.
7. (original) The process of claim 6, wherein said shaped article is passed through a curved cooling die that is equipped with an internal means which forces some of the reinforcing fibers to travel a longer path through the die than others, and wherein the thermoplastic is solidified in said cooling die, thereby forming a curved composite.
8. (original) The process of claim 2, wherein said thermoforming is performed by winding said shaped article on a mandrel, and then cooling said shaped article to a temperature below the solidification temperature of the thermoplastic resin.
9. (original) The process of claim 2, wherein said depolymerizable and repolymerizable thermoplastic is a thermoplastic polyurethane or polyurea.
10. (original) The process of claim 8, wherein said reinforcing fibers are glass, other ceramic, carbon, metal or polymeric fibers.
11. (previously amended) The process of claim 2, wherein said thermoplastic resin is a blend of a depolymerizable and repolymerizable polyurethane or polyurea with one or more of resins selected from the group consisting of: polystyrene, polyvinyl chloride, ethylene vinyl acetate, ethylene vinyl alcohol, polybutylene terephthalate, polyethylene terephthalate, acrylonitrile-styrene-acrylic, ABS (acrylonitrile-butadiene-styrene), polycarbonate, aramid and polypropylene resin.